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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JOHN C. S. KOO

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Appeal 2009-002670  
Application 10/613,741  
Technology Center 3700

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Decided: August 28, 2009

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Before ERIC GRIMES, LORA M. GREEN, and  
RICHARD M. LEOVITZ, *Administrative Patent Judges*.

GRIMES, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims directed to a shoe. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

STATEMENT OF THE CASE

Claims 1-36 are on appeal. Claims 1, 9, and 21 are representative and read as follows:

1. A shoe comprising:

(a) a bottom surface that is adjacent to the ground in normal use and that has a plurality of indentations, with lower extending portions between the indentations;

(b) a sole that forms at least a portion of the bottom surface;

(c) an upper portion extending above the sole; and

(d) a plurality of small particles bonded to at least some of the lower extending portions, but wherein each of the plurality of indentations is predominantly uncoated with said small particles.

9. A shoe according to claim 1, wherein the small particles comprise metal.

21. A shoe according to claim 1, wherein the small particles are bonded using a temporary adhesive that allows the particles to wear off during normal outdoor use.

The claims stand rejected under 35 U.S.C. § 103(a) as follows:

- claims 1-8, 10-20, and 24-36 in view of Shin<sup>1</sup> and Root;<sup>2</sup>
- claim 9 in view of Shin, Root and Bible;<sup>3</sup> and
- claims 21-23 in view of Shin, Root and Schaffer.<sup>4</sup>

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<sup>1</sup> Shin, US 4,658,514, Apr. 21, 1987

<sup>2</sup> Root, US 2,793,136, May 21, 1957

<sup>3</sup> Bible, US 4,779,360, Oct. 25, 1988

<sup>4</sup> Schaffer et al., US 5,276,981, Jan. 11, 1994

## OBVIOUSNESS I

### *Issue*

The Examiner has rejected claims 1-8, 10-20, and 24-36 under 35 U.S.C. § 103(a) as being obvious in view of Shin and Root.

The Examiner finds that Shin discloses “a shoe comprising a bottom surface that ... has a plurality of protrusions 76 and a plurality of indentations ... with only the protrusions having ridges 78 applied thereto to aid in affording traction to the user” (Answer 3). The Examiner finds that Root discloses bonding “a plurality of small articles to the bottom of [a] shoe in place of ridges to provide [a] better slip-resistant surface” (*id.*). The Examiner concludes that “it would have been obvious, to one of ordinary skill in the art ... to replace the ridges on the lower extending portions of the protrusions of Shin ‘514 with the adhesively bonding [sic] small particles as taught by Root ‘136 to provide [a] better slip-resistant surface” (*id.*).

Appellant contends that the Examiner erred in finding that one of skill in the art would have been motivated to combine the particles of Root with the running shoe of Shin (Appeal Br. 11).

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that one of skill in the art would have been motivated to combine Root’s particles with Shin’s running shoe?

### *Findings of Fact*

1. Shin discloses a “running shoe having a sole structure that includes an outsole ... having a thickened section extending the full width of the sole structure and positioned to underlie the ball of the foot,” with a “plurality of parallel slots ... cut in the thicker section” (Shin, abstract).

2. Figure 3A of Shin is shown below:

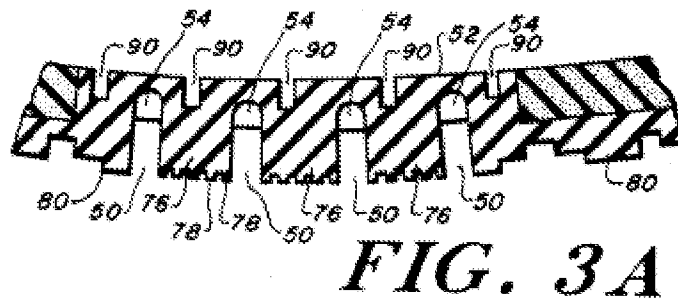


Figure 3A shows an enlarged fragmentary cross-sectioned view of the outsole of Shin's shoe (*id.* at col. 2, ll. 21-29).

3. Shin discloses that

the slots 50, which traverse the ball section 44 of the outsole, define three major bar treads 76 that extend across the ball of the sole structure. These bars are in turn provided with several small ridges 78 on their lower surfaces to maximize the traction afforded by the bars. The ridges 78, because they are relatively narrow in cross-section measured from front to rear, are quite flexible so as to provide an added cushioning effect at the ball area to reduce shock upon impact.

(*Id.* at col. 3, l. 65-col. 4, l. 6)

4. Root discloses "slip resistant surfaces particularly suitable for articles of footwear" (Root, col. 1, ll. 15-16).

5. Root discloses that the slip resistant surface can be formed "by coating or impregnating a surface 12 ... with a relatively thick layer 14 of a fluid dispersion of finely divided resin in plasticizer and thereafter distributing angular or rough ... resin granules 16 on or in the resin dispersion" (*id.* at col. 3, ll. 1-8).

6. Root discloses that its method is also applicable to stair treads, flooring, and handholds (*id.* at col. 3, ll. 14-15).

7. Root discloses that granules may vary in size, but are preferably 1/16 inch to 1/2 inch in diameter (*id.* at col. 4, ll. 53-55).

8. Root discloses that “the resin layer should have a thickness ... at least of the order of thickness of the particles” (*id.* at col. 3, ll. 30-33).

9. Root discloses that suitable resins include vinyl chloride-vinyl acetate copolymers, polyvinyl chloride, polymethyl methacrylate, and vinyl chloride-vinylidene chloride copolymers (*id.* at col. 4, ll. 33-39).

10. Root discloses that “[i]n general, the granules may be of the same types of resin as the resin ... dispersion” (*id.* at col. 5, ll. 8-10).

11. Root discloses that the sole of a woolen muk-luk was given a coating of a resin dispersion of a sufficient thickness to impregnate the wool felt sole to a depth of about 1/8 inch and that particles, with an average thickness of 1/8 inch, were sprinkled on this surface (*id.* at col. 5, ll. 35-50).

12. Root discloses that the dispersion “may also include finely divided or fibrous fillers” (*id.* at col. 4, ll. 49-51).

### *Principles of Law*

“[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious,” the answer depends on “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007).

The obviousness analysis “can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418.

“The fact that the motivating benefit comes at the expense of another benefit ... should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006).

*Analysis*

Claim 1 is directed to a shoe comprising a bottom surface that has lower extending portions between a plurality of indentations, and small particles bonded to at least some of the lower extending portions, but having the indentations “predominantly uncoated with said small particles.”

Shin discloses a shoe with a bottom surface that has lower extending portions between a plurality of indentations. Shin also discloses that the lower extending portions comprise ridges for traction. Root discloses footwear coated on the bottom with a slip resistant surface that comprises resin granules anchored in a supporting matrix. In view of these disclosures, we conclude that it would have been obvious to one of skill in the art to modify Shin’s shoe to provide Root’s granules on the lower extending portions of Shin’s shoe in order to provide increased traction as taught by Root, because Shin teaches including traction-increasing ridges in its shoe. Replacing Shin’s ridges with Root’s granules is no more than the predictable use of prior art elements according to their established functions.

Appellant argues that one of skill in the art would not have been motivated to combine the cited references because Shin’s running shoe is unlikely to benefit from hard resin granules (Appeal Br. 9).

This argument is not persuasive. Shin discloses that its running shoe includes ridges on the bottom for increasing traction, and Root discloses that its particles also increase traction. Thus, a person of ordinary skill in the art would recognize that Root's particles provide the same benefit as Shin's ridges.

Appellant argues that Shin's ridges are disclosed as having two purposes: to maximize traction and to provide cushioning (Appeal Br. 10). Appellant argues that one of skill in the art would not have been motivated to coat Shin's shoe with hard resin particles because Root's particles provide a different type of traction than ridges and particles would not provide a cushioning effect (*id.*). Along the same line, Appellant argues that replacing Shin's ridges with Root's particles "would require several additional manufacturing steps" (*id.*).

This argument is not persuasive. Assuming for the sake of argument that Root's particles would not provide the cushioning effect of Shin's ridges, and would require additional manufacturing steps, one of skill in the art would recognize that the substitution of particles for ridges might involve some trade-off of benefits. As Appellant has pointed out, Root's particles provide "traction when the protruding hard granules dig into a relatively soft surface" (Appeal Br. 10). A person of ordinary skill in the art would recognize that Root's particles therefore would be preferred for a running shoe intended for a soft surface like grass or a running track, even if they resulted in loss of cushioning or additional manufacturing steps.

Appellant argues that "Root's process requires a relatively thick layer of fluid dispersion (e.g., at least 1/8 inch thick)" and that the "thickness of



this layer ... makes it impossible, or at least highly impractical, to differentially apply ... particles to the bottom of Shin's running shoe;" i.e., "to coat Shin's bar treads 76 but avoid coating its slots 50" (Appeal Br. 10).

This argument is not persuasive. Although Root discloses an example in which a wool felt sole was impregnated with a 1/8 inch layer of coating material, Root also discloses that its particles can be as small as 1/16 inch and that the resin can be roughly as thick as the particles. Thus, one of skill in the art would recognize that Root's product does not require a 1/8 inch layer of coating material. In addition, claim 1 requires only that the indentations are "predominantly uncoated" with particles, and therefore encompasses products that have some incidental particle coating in the indentations. Appellant has not shown that Root's method is incapable of producing a product within the scope of the instant claims.

Appellant argues that "it is unclear how well Root's mixture would adhere to Shin's relatively narrow bar treads" and that there "is simply no evidence to indicate that such an application would work as a practical matter" (Appeal Br. 11).

This argument is not persuasive. Root discloses the application of its particles to several different substrates, e. g. shoes, a handhold, and floors. Appellant has provided no evidence to show that applying Root's method to Shin's shoe would not have been well within the level of ordinary skill in the art.

Appellant has argued separately claims 6 and 35, 7, 8, and 33 (Appeal Br. 12-16). Claims 6 and 35 require that "the small particles comprise a fabric material" and "have been applied using a flocking technique." Claims

7 and 8 require that particles comprise leather and rubber, respectively. Claim 33 requires that “the small particles are bonded to the different areas of the bottom surface using a backing sheet material.”

With respect to claims 6 and 35, Appellant argues that the “Examiner’s only mention of using fabric material is in reference to column 4, lines 49-51 of Root,” which only discloses that “finely divided or fibrous fillers are included *within* the dispersion” not on the surface (Appeal Br. 12-13).

Appellant’s argument is persuasive. Root discloses that its dispersion (i.e., coating material) can include “fibrous fillers” but that the granules that are on the surface of the dispersion are “angular or rough” resin granules (FF 5). The claims, however, recite that the particles “comprise” fabric material. There is no information in Root that the particles, themselves, are made of fabric or include fabric. Thus, we agree with Appellant that the Examiner has not adequately shown that the cited references would have suggested the limitations of claims 6 and 35.

With respect to claims 7 and 8, Appellant argues that particles made of leather or rubber are not suggested by the combination of references (Appeal Br. 13-16).

The Examiner reasons that Root “discloses that a variety of particles can be used for forming the slip resistant surfaces” and that “it would have been obvious to one of ordinary skill in the art at the time the invention was made, to make the particles ... out of natural or synthetic leather, [or] natural or synthetic rubber, ... as these materials are well known and used in the art for aiding in slip prevention” (Answer 6).

Appellant's argument is persuasive. Root discloses several suitable resins for the resin dispersion and discloses that its granules may be of the same types of resin as the resin dispersion. But Root does not expressly disclose that leather or rubber may be used as particles, and the Examiner has not adequately shown that those of skill in the art would have recognized leather or rubber particles as an obvious substitution for the "angular or rough" particles used by Root (FF 5). Thus, the Examiner has not adequately explained how Root's disclosure would have suggested the natural and synthetic leather and rubber particles of claims 7 and 8.

With respect to claim 33, Appellant argues that particles bonded using a backing sheet material are "not disclosed or suggested by the applied art. In fact, the Examiner has not even argued that it is." (Appeal Br. 16).

Appellant's argument is persuasive. The Examiner has not addressed the limitation of claim 33 and thus has not adequately explained how the cited references would have suggested the limitation of claim 33.

### *Conclusions of Law*

The evidence of record supports the Examiner's conclusion that one of skill in the art would have been motivated to combine Root's particles with Shin's running shoe. The evidence of record does not support the Examiner's conclusion that Shin and Root would have suggested the limitations of claims 6-8, 33, and 35.

## OBVIOUSNESS II

### *Issue*

The Examiner has rejected claim 9 under 35 U.S.C. § 103(a) as being obvious in view of Shin, Root, and Bible. The Examiner relies on Shin and Root as discussed above, and finds that Bible “teaches that grit material used to gain [a] grip on slippery surfaces can be made of aluminum oxide, silicon carbide or tungsten carbide (i.e. metals) for their durability, less tendency to crumble and their hardness to scratch or furrow up metallic slippery surfaces” (Answer 6). The Examiner concludes that “it would have been obvious, to one of ordinary skill in the art at the time the invention was made, to make the grit particles of Shin-Root ... out of metal, as taught by Bible '360, to aid in gaining [a] grip on metallic or rough surfaces” (*id.* at 6-7).

Appellant contends that the Examiner erred in finding that one of skill in the art would have been motivated to combine the cited references because Root discloses that “the particles and the matrix in which they are suspended both are made from resin” and Bible’s metal grit particles would not be “an acceptable substitute for Shin’s ridges” (Appeal Br. 17).

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that one of skill in the art would have been motivated to combine Bible’s metal particles with the shoe suggested by Shin and Root?

### *Additional Findings of Fact*

13. Bible discloses a “shoe attachment ... to prevent inner and outer skidding” (Bible, abstract).

14. Bible discloses that the shoe attachment includes a “sole 22 is fabricated from rubber impregnated with granular particles” (*id.* at col. 2, ll. 29-54).

15. Bible discloses that “a homogeneous mixture of particles 30 serve[s] to provide adequate anti-skidding forces particularly if the particles are fabricated from aluminum oxide, silicon carbide and/or tungston [sic] carbide” (*id.* at col. 2, ll. 54-58).

### *Analysis*

Claim 9 depends from claim 1 and further requires that the small particles comprise metal. The disclosure of Shin and Root are discussed above. Bible discloses a shoe attachment to prevent skidding that includes a rubber sole impregnated with metal particles. In view of these disclosures, we conclude that it would have been obvious to one of skill in the art to modify the shoe of Shin to have Bible’s traction/anti-skid metal particles embedded in the resin of Root. The combination is no more than the predictable use of prior art elements according to their established functions.

Appellant argues that Root discloses that “the particles and the matrix in which they are suspended both are made from resin” (Appeal Br. 17) and that Bible’s metal grit particles would not be “an acceptable substitute for Shin’s ridges” (Appeal Br. 17).

These arguments are not persuasive. Although Root only specifically discloses particles made of resin, the ridges of Shin’s shoe and the metal particles of Bible’s shoe attachment have the same purpose as Root’s particles – to increase the traction of a shoe. Given their identical purposes, a person of ordinary skill in the art would have considered it obvious to

substitute Bible's metal particles for Root's resin particles and to use them on Shin's shoes in place of Shin's ridges.

*Conclusions of Law*

The evidence of record supports the Examiner's conclusion that one of skill in the art would have been motivated to combine Bible's metal particles with the shoe suggested by Shin and Root.

OBVIOUSNESS III

*Issue*

The Examiner has rejected claims 21-23 under 35 U.S.C. § 103(a) as being obvious in view of Shin, Root, and Schaffer. The Examiner relies on Shin and Root as discussed above. The Examiner finds that Schaffer discloses that "the material for particles attached to the bottom of shoe soles to aid in gaining traction can be modified to wear over given time frames, including weeks" (Answer 7). The Examiner concludes that "it would have been well within the skill of one of ordinary skill in the art, to modify the material of the particles attached to the sole of Shin-Root as applied to claim 1 above to last over any time period desired, as taught by Schaffer ... to determine the wear life of the sole of the shoe" (*id.*).

Appellant contends that the Examiner erred in finding that the cited references suggest particles attached with a temporary adhesive (Appeal Br. 18).

The issue with respect to this rejection is: Does the evidence of record support the Examiner's conclusion that the cited references suggest particles attached with a temporary adhesive?

*Additional Findings of Fact*

16. Schaffer discloses a “very long wearing material to replace regions that erode rapidly in the heels of outdoor shoes” (Schaffer, abstract).

17. Schaffer discloses solving “the problem of rundown heels on outdoor shoes by embedding relatively large, wear-resistant, round particles in a very hard urethane binder” (*id.* at col. 1, ll. 30-40)

18. Schaffer discloses that the material “can replace the high wear region in the heels of outdoor shoes and endure from 500 to 1000 miles of pavement pounding,” and that the “prime function of the binder is to hold the particles in place” (*id.* at col. 2, ll. 3-16).

19. Schaffer discloses that “[o]nly very hard polyurethanes have proved satisfactory” as a binder (*id.* at col. 2, ll. 33-34).

20. The Specification discloses that “preferably, the particles adhere to the bottom surface of the shoe using a relatively weak or temporary adhesive that will allow the particles to wear off within a fairly short period of outdoor use” (Spec. 5: 6-8).

*Principles of Law*

“In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993).

*Analysis*

Claim 21 depends from claim 1 and further requires that “the small particles are bonded using a temporary adhesive that allows the particles to

wear off during normal outdoor use.” Claims 22 and 23 depend from claim 21.

Appellant argues that Schaffer “describes the use of particles for creating a material for use on a shoe’s sole that will be more wear-resistant” and that “using a temporary adhesive would have defeated the goal that Root is trying to achieve[ ], i.e. resistance to slipping” (Appeal Br. 18).

Appellant’s arguments are persuasive. Schaffer discloses a long wearing material to replace regions that erode rapidly in the heels of outdoor shoes. Given that the emphasis in Schaffer is on a long wearing material, the Examiner has not adequately explained how the combination of the cited references would have suggested a temporary adhesive that would allow particles to wear off during normal outdoor use, which is the opposite effect from that disclosed by Schaffer.

### *Conclusions of Law*

The evidence of record does not support the Examiner’s conclusion that the cited references suggest particles attached with a temporary adhesive.

### SUMMARY

We affirm the rejection of independent claims 1 and 30 under 35 U.S.C. § 103(a) as being obvious in view of the cited references. Dependent claims 2-5, 9-20, 24-29, 31, 32, 34, and 36 fall with claims 1 and 30. 37 C.F.R. § 41.37(c)(1)(vii). However, we reverse the rejection claims 6-8, 21-23, 33, and 35 under 35 U.S.C. § 103(a).



Appeal 2009-002670  
Application 10/613,741

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

dm

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